# EDUCATION OF THE PREMEDICAL STUDENT IN THE HUMANITIES AND THE BIOLOGICAL AND PHYSICAL SCIENCES*

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AFTER World War II there was a wave of self-examination in the field of education from which medical education was not exempt. In 1949 the Survey of Medical Education began, with Dr. John Deitrick as director. Associated with that effort was another study, concerned with the education that students were receiving before going to medical school. This study was supervised by the Subcommittee on Preprofessional Education of the Survey of Medical Education, with Dr. Aura E. Severinghaus as chairman. Dr. Harry J. Carman, who had just retired as dean of Columbia College, was director of this part of the survey, and I took leave from Haverford College to serve as associate director.

Dr. Carman or I, or both together, visited 115 colleges and universities in 1950 and 1951, and from what we learned on those visits, from the proceedings of two national conferences, and from other sources, we gathered the ideas expressed in the report *Preparation for Medical Education in the Liberal Arts College*, published in 1953. Beginning again in 1958, we revisited most of those same institutions and conducted one more conference. Our second book, published in 1961, described the changes we saw in premedical education, and added a few guarded predictions for the future.

We are here to discuss the education of the premedical student. It seems to me that it might be useful to take a look at some of the things

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that concerned us then, to compare them with what we see happening, and to find what some of us think should happen in the college education of tomorrow's medical students.

Two decades ago one of our principal concerns was to broaden the base of the education of the prospective medical student. We recommended that "every student, irrespective of what he intends to do vocationally, should think of himself as a liberal arts student in search of a well-rounded education, and should be treated as such." Showing that we were not too confident that official statements could always be taken at face value, we recommended that "medical schools should act in accordance with their statements urging a liberal education, and that students and advisers should believe them and act accordingly." We recommended that "if there is a premedical committee ... it should include representatives of the social sciences and the humanities as well as the physical and biological sciences."

We included a chapter on "A Balanced Education." We recommended that "medical schools should strongly urge students to secure a broad liberal education." We urged that "distribution requirements should be retained and, where necessary, strengthened." But we were not concerned with breadth alone. We urged the development of strong programs of majors. We recommended that "every student's program should provide for the development of his intellectual capacity along at least one line toward a high level of maturity." We felt that it was relatively unimportant in what field that high level of maturity was developed. We recommended that students "should be encouraged to select their majors freely in accord with their desires and interests." We attempted to make clear, however, that no amount of breadth of outlook or of academic success in other fields would offset a lack of competence and achievement in the sciences basic to medicine.

We were especially concerned that, in trying to shorten the educational span, students should not simply omit the senior year in college but that provision should be made for unusually mature students to move along faster than others so that they would be ready for the experience of a good senior year program a year earlier than usual.

In 1958, when we took another look to see what had happened in the intervening years, we found a considerable amount of change in the directions we had urged, and some changes which we had not clearly anticipated.

We said in our second report that "the most dramatic single development ... involves studies and ... experiments, leading ... toward integration of liberal and medical education and in some cases toward shortening the total educational span."

In our first report we had said that it was "essential to find ways and means whereby we may shorten the span and at the same time teach more effectively." Our second report expressed

> a certain feeling of concern that, although the cause of liberal education has seemingly received increasingly enthusiastic support ... programs are appearing ... designed to shorten the total educational span of the prospective physician by providing a greater concentration in the basic sciences and the elimination of time that could be devoted to the humanities, social sciences, and programs of independent study in depth in any discipline of the student's choice.

In our second study we found more flexibility of college curricula, greater interest than before in the gifted student, and more opportunities for independent study. Where there were changes in course patterns, they were almost always in the direction of greater breadth rather than less. There was some diminution of the practice of admitting students to medical school after only three years of undergraduate work, but we noted "far from unanimous agreement that the fourth year in college is always time well spent."

More than a decade has passed since our second study. During that time American education has undergone some fundamental changes.

The most important of these is surely a tendency toward flexibility —some might say permissiveness—in all American education. Elimination of many distribution and other requirements makes it far from certain that students who graduate from college will be exposed to a wide variety of intellectual experiences. Does this mean that future generations of doctors will be less broadly educated than those trained in the recent past? Will many of them, for example, be ignorant of the history of western civilization? Or are the cries for relevance justified? Did the required course in western civilization really accomplish much for the student who had little interest in the subject?

Reduction of emphasis on grades, introduction of pass-fail grading, or even elimination of grades altogether, has brought about a new situation in many colleges. Shall we have a generation of doctors who

have never burned the midnight oil to master the intricacies of wave motion, of acid-base equilibria, or the structure of certain nucleic acids? Or is the burning of midnight oil of any value? Are they correct who say that what is learned because of the pressure of grades is not really learned at all? As a result of these changes shall we perhaps have at last a generation of doctors who have learned what they need to know because of the sheer joy of learning?

I suspect that, as is often the case, the truth lies between the two extremes, that perhaps a more rigid learning pattern is more effective for some, that more flexibility is best for others. But whether the changes are good or bad there is no doubt that the education of prospective physicians today is quite different from what it was a decade and more ago.

Increased flexibility of the educational process is perhaps the most important change of the past decade. Increasing heterogeneity of the student bodies of many medical schools is not far behind.

In the Survey of Preprofessional Education, and again in the restudy, there was not much emphasis on the implications of segregated education. However, the very first recommendation in the 1953 report was that "no person should be denied the opportunity to fit himself for the profession of medicine because of color, creed, national origin, or socio-economic status." It is clear that we recognized the value of heterogeneity—of different points of view—because we also recommended that "the liberal arts colleges should make every effort to ensure opportunity for those who plan a medical career to have contact with students of widely different interests and aims in life." We said "different interests and aims"; I wonder if we also had in mind different backgrounds. Surely black students learn something from white students that they cannot learn from other black students, and vice versa.

Among the colleges that participated in the study were five predominantly black colleges: Dillard, Howard, Lincoln, Morehouse, and North Carolina College, now North Carolina Central University. However, I doubt if the report was appreciably different because those colleges were included.

We were looking for, and we found, essentially the same things at those colleges as elsewhere: some students were strong in science and some were weak; some were motivated by desire of personal gain, some for a life of service, some motivated hardly at all. Only the

students with the highest academic records were admitted to medical school. Black students from the black colleges went to Meharry and Howard; white students went to other medical schools; black students from other than the black colleges and black students in medical schools other than Howard and Meharry were too few to make much impression. The number of Mexican-Americans, American Indians, and mainland Puerto Ricans who went to any medical schools was very small indeed.

The great majority of medical students were very able middle-class or upper middle-class white males. Most of the few female students came from the same kinds of homes, were as bright or brighter, and had the same sets of values.

Thus concern for the education of the physician of the future was concern for a very homogeneous group of people. Broadening their education before medical school was particularly important because they were not likely to encounter much broadening from their fellow students after they got there.

Not only did most medical students come from quite similar home and family backgrounds, but they had had fairly similar educational experiences. Most of them had gone to college from high schools which were at least adequate, and had attended quite similar colleges—four-year institutions, some free-standing, some parts of universities. Admittedly, in many ways Oberlin College is different from Indiana University, and both are different from Lincoln, but their programs were basically quite similar. The vast majority of medical students had attended college for four years, taking chemistry, mathematics, biology, and physics to meet medical school requirements; taking English, a foreign language, a year or two of social science, and a year or two of humanities to meet college requirements; and following one of these fields—more often than not biology—in some detail to establish a major. This pattern is still quite common, but it is no longer nearly universal.

Instead of attending one liberal arts college for four years, or in a few cases for three and counting the first year of medical school as the fourth, many students today spend their first two years after high school in a junior college or a community college, and then transfer to the second half of a standard four-year program. Among students with very limited resources, and among others as well, staying out of school for a year or more, or interrupting college education for a time,

is not at all unusual. And it is now much more common than it used to be for a student to graduate from a school of engineering or a school of pharmacy, rather than a liberal arts college, before attending medical school. Finally, there are now many medical students who have had a good deal of graduate study; the number of them who already hold Ph.D. degrees is by no means insignificant.

Because medical students were so homogeneous 10 and 20 years ago it made sense to talk in general terms about what they should study before going to medical school. With a much more heterogeneous group such generalizations are difficult.

When almost the only students who gained admission to medical schools were those who had done well in high schools which were at least adequate, had gone on to standard four-year colleges, and had performed excellently in rigorous science courses, it made sense to insist that they should add breadth to the strong scientific preparation they had received. But what about the heterogeneous group of students coming to many medical schools today? Can we expect all of them to fit the same mold?

In the late 1940s the ratio of applicants to places in medical schools reached a high of nearly 4 to 1. Then it dropped to less than 2 to 1, and today it is creeping up above 2.5 to 1, and probably going higher. With many more applicants than places, a student has to have unusual qualifications to gain admission. The most obvious of these qualifications is a high grade point average. Another is some personal characteristics which will suggest to the admissions committee that the student is likely to make a particular contribution to society if he becomes a physician. For example, a minority member may be judged to have such qualifications since, by becoming a doctor, he can help to relieve the present desperate shortage of physicians from minority groups.

Medical schools are tending to accept only those white students who have shown that they can meet conventional academic scientific challenges with great success. Some of the minority students accepted by medical schools have been equally successful; others are accepted in spite of less impressive scientific records because of other qualifications. This leads to a dilemma. For those whose scientific preparation is such that they may have to work unusually hard to meet the rigorous scientific demands of medical school curricula, it may be quite

unwise to replace part of that scientific preparation with "broadening" work in other areas.

We could outline the ideal preparation for medical education with more confidence if we were sure exactly of what we want. Medical school admissions have been largely a matter of choosing those students who stand the best chance of meeting successfully the challenge of the basic science courses of the first two years. But the first two years are not all there is to medical education.

Although a biochemical genius may be more likely than a run-of-the-mill scientist to add significantly to the sum total of human knowledge, he is not necessarily the person who will make the best practicing physician. Most medical schools have an obligation to help develop new knowledge, but they must also train physicians to deliver health care effectively. There is at present little evidence to indicate what kind of education a student should have to prepare him to profit from such training.

Our two reports emphasized that the physician who is broadly educated is most likely to serve society well. I have not changed my opinion that the college years should help the student to develop maturity and breadth of outlook as well as academic competence. I believe that in most cases such breadth can best be achieved in the context of a liberal education. But there are ways of gaining breadth other than taking a wide variety of courses in college.

The personal backgrounds and college preparation of today's medical students are now quite varied. This diversity presents a challenge to the medical schools to make their curricula sufficiently flexible, so that students with widely different kinds and levels of preparation can become well-educated physicians.